MEXICO AND GUATEMALA TRIP REPORT
MAY 16 TO JUNE 9, 2000

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The following report is for the first year of the 3-year Mexico effort for pheromone work as an alternative to 'hard' pesticides. Objectives of this work involve transfer of knowledge and technology to evaluate behavioral chemicals, and to develop and test efficient application systems for those pheromones proven to be effective. This year, special emphasis was placed on documentation of cone beetles attacking rare and endangered pine species in Mexico, and the possibility for the need of cooperators in southern Mexico and Central America. The following itinerary is an attempt to document travel and activities of the team from May 16 to June 9, 2000. During this travel, ground transportation for the team was provided by: The University of Michoacan de San Nicolas de Hidalgo in the States of Michoacan and Guanajuato; by the University of Chapingo in the States of Mexico and Hidalgo; and by Colegio de la Frontera Sur (ECOSUR) in the State of Chiapas and in the country of Guatemala.

May 16. Nancy Rappaport, Sylvia Mori, and John Stein (the team) met in Mexico City to discuss trip itinerary and pending projects in the State of Michoacan.

May 17. Team proceeded to Uruapan and met with Dr. Adolfo del Rio Mora, University of Michoacan de San Nicolas de Hidalgo, Morilia (w/ office in Uruapan). The afternoon was spent discussing experimental designs, and organizing pheromones and field equipment.

May 18-19. The team met with Adolfo and his field crew and the group proceeded to Dos Aguas in southern Michoacan. Upon arrival we met Eloy Oseguera Lopez, Manager, Industrias Forestales Del Suroeste (INFORSO). The main company office of INFORSO is located in Coalcoman, Mich. Arrangements were made to stay in the bunkhouse at Dos Aguas. The next day a guide provided by INFORSO, took the group to Puerto del Pinabete and introduced us to Jose Zapien. Jose is the owner of the property on which the very rare and endangered *Pinus rzedowskii* is found. Jose guided us to his isolated stand and we established monitoring traps in designated trees. Regeneration of this pine was noted on this extremely rocky and steep site. The group returned to Dos Aguas and established monitoring traps in a stand of *Pinus herrerai*.

May 20-22. The group departed Dos Aguas and returned to Uruapan. The team spent the balance of the weekend visiting locations near the town. Departure to the field on the 22nd was delayed one day due to truck repairs.

May 23-24. The group departed Uruapan and arrived in San Louis de la Paz. Met with the local authority responsible for forestry and made arrangements with an ejido to locate field plots for *Pinus cembroides* near San Jose de Iturbide (Carvajal la Ladera Alta) at 3500m elevation. Inspection of host trees indicated abundant insect damage to flowers and *Eucosma bobana* damage to cones and branches. Five treatments and a control were installed. With our advice, Adolfo used treatments with binary

combinations of pityol with 4-allylanisole, conophthorin, methylcyclohexenone, and a-pinene.

May 25-28. The group departed for return trip to Uruapan. N. Rappaport, S. Mori, and J. Stein met with Adolfo to discuss previous work and strategies for future work. Monitoring traps were installed in *Pinus ayacahuite.* The team provided advice that specifically dealt with *P. psuedostrobus* cone protection from *C. conicolens*. Location of this work may occur near Capacuaro. Friday was spent explaining the equipment setup and procedure for pheromone and host volatile extractions. Sylvia Mori departed for the United States on Saturday. The balance of the weekend involved touring and business meetings with Adolfo.

May 29- June 2. Monday N. Rappaport and J. Stein departed Uruapan and traveled to Texcoco. They met with Dr. David Cibrian Tovar, Professors Jose Tulio Mendez Montiel & Rodolfo Campos Bolanos, and two field technicians. Worked at the Universidad Autonoma Chapingo until 8 PM, organizing and advising setup for experiment on *Pinus cembroides*. On Tuesday, Rappaport, Stein, Campos, and Rosalio Mejia Vasquez departed for Cardonal in the state of Hidalgo. The group received permission from the Ejido del la Mesa to install the protection study in *Pinus cembroides*. The group documented current infestations of Conophthorus beetles in the very rare and endangered *P. pinceana*, and also in *P. cembroides* cones. Returned to Texcoco at 11:30 PM. The group convened at the Zoqiapan Experimental Forest to set up a protection experiment on *P. hartwegii*. Nancy and I demonstrated selection of candidate trees and provided instruc tions for pheromone traps. Inclement weather and severe flooding delayed instillation of the experiment. Friday evening, Nancy and I left Texcoco for Mexico City.

June 3-6. N. Rappaport and J. Stein departed Mexico City in route to Tapacula in the State of Chiapas. Saturday afternoon we met with Dr. Jorge Macias-Samano at Colegio de la Frontera Sur (ECOSUR), and he introduced us to the teaching staff of the ecological group. On Monday, N. Rappaport, J. Stein, and Dr. J. Macias departed for Huehuetenango in Guatemala, by way of Quezaltenango. The following day we met with Professor Jorge Obispo Vasquez Mejia, botanist, Centro Universitorio del Nor-Occidente (CUNOROC). N. Rappaport and J. Stein provided necessary training to J. Macias and J. Vasquez to install pheromone monitoring traps at two sites. The first site was at the village of Izquial in the Ocuvichal area (2500m elev.) in a stand of *P. pseudostrobus*. The second field site was near the town of Mala (Municipality of Malacatanicto – 1695m elev.) and was located in a stand of *P. oocarpa*. During this time we also met with Byron Felipe lec de Leon, Insstituto Nacional de Bosques (INAB), to discuss his responsibilities in forestry and the importance of pine species in this region (Region #7). He indicated that *P. ayacahuite, P. maximinoi, P. oocarpa*, and *P. pseudostrobus* were the commercial pine species in this region of Guatemala. *Pinus chiapensis* is also important because of the threatened status.

June 7-8. Nancy, J. Macias and J.Stein departed Huehuetenango and traveled to San Cristobal de las Cases, Chiapas, Mexico. We proceeded to the local campus of ECOSUR and met with professor Neptali Ramirez-Marcial, botanist. During our discussions with Professor Ramirez, he confirmed the priority of *P. oocarpa, P. maximinoi*, and *P. pseudostrobus* (respectively) as the 3 most important pine species in the State of Chiapas. He also discussed species distribution maps and made

recommendations for field site locations in pine stands. Civil unrest in the area by the Lacandon Indians, delayed trap instillation by Dr. Macias. The group departed for return to Tapachula. On this return trip, we discovered the southern pine beetle, *Dendroctonus frontalis*, infesting *P. nubicola* (?) in the mountains near the village of Domingue.

June 9. N. Rappaport and J. Stein toured the ECOSUR facility at Tapachula with Dr. Macias and then departed for Mexico City and the return to the United States.